HK CONTRACTORS, INC.
Equal Opportunity Employer

P.O. Box 51450
Idaho Falls, Idaho 83405
(208) 523-6600
Fax (208) 523-6021

HK CONTRACTORS, INC.

(208) 523-6600
Fax (208) 523-6021
clarencedavis@hkcontractors.com

Clarence Davis

6350 S. Yellowstone Hwy. • Post Office Box 51450
Idaho Falls, Idaho 83405
E.O.E.

September 25, 2008

Mr. Bill Rogers
Permitting Manager
Air Quality Division
State of Idaho
Department of Environmental Quality
1410 North Hilton
Boise, Idaho 83706

Re: New Permit to Construct

Dear Mr. Rogers:

H K Contractors, Inc. has purchased a new Astec Hot Plant for the Idaho Falls area. I am sending two (2) copies of the application for your review and use. I have included all of the data from the new hot plant.

If we are missing some information or you have concerns regarding the new hot plant or the application please feel free to call me at 208-523-6600 and I will be glad to assist you.

Thank you for your assistance with this permit to construct.

Sincerely,

Clarence H Davis
Environmental Manager
H K Contractors, Inc.
P.O. Box 51450
Idaho Falls, Idaho 83405

208.523.6600
208.523.6021 (fax)
208.317.8612 (cell)

Cc: Larry Ritter

IDAHO DEPARTMENT OF ENVIRONMENTAL QUALITY

1410 North Hilton
Boise, Idaho 83706-1253

RECEIPT

9/26/08
DATE

RECEIVED FROM HK Contractors
P.O. Box 51450
Idaho Falls

SOURCE
Cash ☐ Check ☑ Money Order ☐ No. _____

DESCRIPTION	AMOUNT OF PAYMENT
PTC New Source	1000 00
1523 E 49th North	
Idaho Falls, ID	
Received in Mail	

RECEIVED BY CG2

TOTAL RECEIVED 1000 00

PID	OBS	CA	SUB-OBJ	WP	BE

№ 82903

PERMIT TO CONSTRUCT

ASTEC HOT PLANT

TABLE OF CONTENTS

PERMIT TO CONSTRUCT (PTC) APPLICATION
For Hot-Mix Asphalt Plants

FORM AQ-F-P007

PTC APPLICATION OVERVIEW

This application is for the construction and operation of portable and stationary hot-mix asphalt plants in all areas of Idaho except the Sandpoint PM_{10} nonattainment area. If you are planning to locate in the Sandpoint PM_{10} nonattainment area, prior to submitting an application please call 208-373-0502 and ask to speak with the Air Quality Permit Coordinator for the Coeur d'Alene region.

PTC APPLICATION INSTRUCTIONS

1. **Application.** Complete the attached PTC application.
2. **Portable Equipment Registration and Relocation Form.** Complete the Portable Equipment Registration and Relocation Form (PERF). An electronic copy of the PERF can be obtained from the DEQ website http://www.deq.idaho.gov/air/permits_forms/forms/forms.cfm. It is important to be aware that in addition to being submitted with this PTC application, a PERF must also be completed and filed at DEQ at least 10 days in advance of relocating any of the equipment covered in this application.
3. **Fees.** In accordance with the *Rules for the Control of Air Pollution in Idaho* (IDAPA 58.01.01.224 and .226), DEQ cannot process this application unless it is accompanied by a one thousand dollar ($1,000) application fee. If the purpose of this permit is to change the name or ownership of the holder of a PTC when DEQ determines no other review or analysis is required, the application fee is waived. The rules can be accessed through the DEQ website http://www.deq.idaho.gov/rules/admin_rules.cfm#links.
4. **Mail.** Please mail the completed PTC application, PERF form, and the $1,000 application fee to the address below. The processing of this PTC application cannot commence without payment.

   Department of Environmental Quality
   Permit to Construct Fees – Fiscal Office
   1410 North Hilton
   Boise, ID 83706-1255

PERMIT TO CONSTRUCT (PTC) APPLICATION
For Hot-Mix Asphalt Plants

FORM AQ-F-P007

Please be sure to read the instructions on page one prior to completing this application form.

GENERAL INFORMATION

Company Name:	H K CONTRACTORS, INC.		
Mailing Address:	P.O. BOX 51450		
City:	IDAHO FALLS	**State:**	IDAHO
Zip Code:	83405	**County:**	BONNEVILLE
General Nature of Business & Products:	General Contractor - Underground Utility, Gravel & Asphalt & Etc.		

Contact Name, Title:	LARRY RITTER \ ASPHALT MANAGER		
Phone:	208-523-6600	**Cell:**	208.317.8627
Email:	larryritter@hkcontractors.com		

Owner or Responsible Official Name, Title:	Clarence H Davis / Environmental Manager		
Phone:	208-523-6600 ext 119	**Cell:**	208.317.8612
Email:	clarencedavis@hkcontractors.com		

Proposed Initial Plant Location:	1523 East 49th North		
Nearest City:	IDAHO FALLS, IDAHO	**Estimated Startup Date:**	April, 2009
County:	BONNEVILLE COUNTY		

Reason for Application:

- ☒ Permit to construct a new source
- ☐ Permit to operate an existing unpermitted source
- ☐ Permit to modify/revise an existing permitted source (identify the permit below)
  - Permit No.: _____
  - Issue Date: _____
  - Facility ID: _____

☒ Check here to indicate you would like to review a draft permit prior to final issuance.

Comments:

THIS NEW PLANT WAS ORDERED IN MARCH AND WILL BE SET UP DURING THE WINTER OF 2008

PERMIT TO CONSTRUCT (PTC) APPLICATION
For Hot-Mix Asphalt Plants

FORM AQ-F-P007

HOT-MIX ASPHALT PLANT INFORMATION

Manufacturer:	Astec, Inc.	**Model:**	RDB-9640
Manufacture Date:	October, 2008	**Type HMA Plant:**	☒ Drum Mix ☐ Batch Mix
Maximum Hourly Asphalt Production:	350 (tons/hour)		
Requested Annual Asphalt Production:	1,000,000 (tons/year)		
Burner Fuel Type:	NG, No 2, Used Oil, Coal (natural gas, #2 fuel oil, etc)		
Maximum Burner Fuel Usage Rate:	730 ☐ scf/hour or ☒ gallons/hour		
Type Air Pollution Control Device:	Baghouse (baghouse, scrubber, etc.)		
Control Device Manufacturer:	Astec, Inc.	**Model:**	RBH-68
Stack Parameters:	Stack Height from Ground (ft): 30	Stack Exhaust Flow Rate (acfm):	68194
	Stack Inside Diameter (ft): 4.2	Stack Exhaust Gas Temperature (°F):	220-365

ASPHALT TANK HEATER

Fuel Type:	NG, No 2 (natural gas, #2 fuel oil, etc)		
Maximum Fuel Usage Rate:	20.6 (units/hour) 180.3k (units/year) ☒ gallons ☐ ft^3 ☐ other:		
Type Air Pollution Control Device:	N/A ☐ MMBtu ☐ HP		
Stack Parameters:	Stack Height from Ground (ft): 7.3	Stack Exhaust Flow Rate (acfm):	647
	Stack Inside Diameter (ft): 0.83	Stack Exhaust Gas Temperature (°F):	600

Is this an NSPS-affected facility? ☒ Yes ☐ No

To determine if the HMA facility is a New Source Performance Standards (NSPS)-affected facility, consider the following:

Were any of the following constructed or modified after June 11, 1973, such that the equipment becomes an affected facility as defined in 40 Code of Federal Regulations, Part 60, Section 90 (40 CFR 60.90) *Standards of Performance for Hot-Mix Asphalt Facilities*:

- Dryers
- Systems for screening, handling, storing, and weighing of hot aggregate
- Systems for loading, transferring, and storing of mineral filler
- Systems for mixing hot-mix asphalt
- Leading, transfer, and storage systems associated with emission control systems

Modification is defined in 40 CFR 60.14. The Code of Federal Regulations can be accessed from the website http://www.gpoaccess.gov/cfr/.

Has a performance test been conducted in accordance with 40 CFR 60.93 that demonstrates particulate matter emissions are less than or equal to 0.04 gr/dscf (grains per dry standard cubic foot) at the HMA stack?

☐ Yes ☒ No

If Yes, state the date the test was conducted: N/A.

Provide a copy of the performance test results with this application if you want DEQ to consider it in determining the frequency of performance testing requirements for your hot-mix asphalt plant.

PERMIT TO CONSTRUCT (PTC) APPLICATION
For Hot-Mix Asphalt Plants

FORM AQ-F-P007

ELECTRICAL GENERATOR SET INFORMATION (IF APPLICABLE)

Manufacturer:	N / A	**Model:**	N / A
Maximum Rated Capacity:	N / A ☐ Hp ☐ kW		
Fuel Type:	☐ Gasoline ☐ Diesel ☐ Natural Gas ☐ Propane		
Maximum Fuel Usage Rate:	N / A ☐ gal./hr. ☐ cfh		
Maximum Daily Hrs. of Operations:	N / A (hours/day)		
Maximum Annual Hrs. of Operations:	N / A (hours/year)		
Stack Parameters:	Stack Height from Ground (ft): N/A	Stack Exhaust Flow Rate (acfm): N/A	
	Stack Inside Diameter (ft): N/A	Stack Exhaust Gas Temperature (°F): N/A	

Manufacturer:	N/A	**Model:**	N/A
Maximum Rated Capacity:	N/A ☐ Hp ☐ kW		
Fuel Type:	☐ Gasoline ☐ Diesel ☐ Natural Gas ☐ Propane		
Maximum Fuel Usage Rate:	N/A ☐ gal./hr. ☐ cfh		
Maximum Daily Hrs. of Operations:	N/A (hours/day)		
Maximum Annual Hrs. of Operations:	N/A (hours/year)		
Stack Parameters:	Stack Height from Ground (ft): N/A	Stack Exhaust Flow Rate (acfm): N/A	
	Stack Inside Diameter (ft): N/A	Stack Exhaust Gas Temperature (°F): N/A	

☒ **$1,000 PTC application fee enclosed**

Certification of Truth, Accuracy, and Completeness (by Responsible Official)
I hereby certify that based on information and belief formed after reasonable inquiry, the statements and information contained in this and any attached and/or referenced document(s) are true, accurate, and complete in accordance with IDAPA 58.01.01.123-124.

Responsible Official Signature	Environmental Manager *Responsible Official Title*	9/22/2008 *Date*

CLARENCE H DAVIS
Print or Type Responsible Official Name

GENERAL PROCESS DESCRIPTION
HOT MIX ASPHALT PLANT
Equipped with an ASTEC Double Barrel® Dryer Drum Coater

INTRODUCTION

This process description is for a typical Hot Mix Asphalt (HMA) plant equipped with an ASTEC Double Barrel® dryer drum coater and with other equipment manufactured by ASTEC Industries, Inc., Chattanooga, TN. A particular plant may have slightly different equipment, but its operation will be generally as described.

VIRGIN AGGREGATE STOCKPILE

Virgin aggregate, with average moisture of 5%, is stored in stockpiles. The stockpiles are separated by material size. Water can be sprayed on the stockpiles and the haul roads to control dust. Material is moved from the stockpiles to the cold feed bins by a wheeled front-end (bucket) loader.

RECYCLE AGGREGATE STOCKPILE

Recycled Asphalt Product (RAP), with average moisture of 5%, is stored in stockpiles. Water can be sprayed on the stockpiles and the haul roads to control dust. Material is moved from the stockpile to the RAP bins by a wheeled front-end (bucket) loader.

COLD FEED BINS AND VIRGIN AGGREGATE FEED SYSTEM

Damp virgin aggregate, of the correct size range, is placed in each cold feed bin by the front-end loader. Belt conveyors under each bin feed aggregate at the proper rate to the gathering conveyor. It is discharged from the gathering conveyor onto the scalping screen, mounted over the inclined conveyor to the Double Barrel®. The screen removes any over sized or extraneous material from the aggregate. Once it has passed through the screen, the aggregate travels up the incline conveyor, across a weigh scale, discharging into the feed chute on the inlet end of the Double Barrel® drum. The weigh scale transmits instantaneous mass flow rates to the computer in the control system. The computer regulates the speed of the coldfeed belt feeders to match the desired production rate.

DOUBLE BARREL® DRYER DRUM COATER

The Double Barrel® is inclined from its material inlet end down to the burner end. Flights in the drum, control the movement of the aggregate, also they shower the material to promote its drying, and heating. Near the burner end of the rotating drum, there are special flights, which prevent the showering of aggregate through the flame, while protecting the shell from excessive heat. These flights form a combustion space, so that the fuels can be efficiently burned without the aggregate showering through the flame.

Near the burner end of the inner drum, openings permit the hot virgin aggregate to fall into the outer, stationary shell. Flights and mixing devices mounted on the exterior of the inner (rotating) drum mix the material in the outer shell as they move it toward the discharge opening. This opening is near the upper end of the outer shell. Liquid asphalt cement (AC), dust returned from the baghouse, and other ingredients are added and then mixed in the outer shell.

The AC and RAP are separated from the hot, wet gasses that they are exposed to in most drum mixers. This greatly reduces the refining of light ends from the asphalt, and the "blue smoke" which these hydrocarbon vapors cause. Vapors released in the outer shell of the Double Barrel® are drawn into the inner drum, to the combustion zone where they are burned.

GENERAL PROCESS DESCRIPTION
HOT MIX ASPHALT PLANT
Equipped with an ASTEC Double Barrel® Dryer Drum Coater

BURNER AND FUEL SYSTEM

A direct-fired burner is mounted on the low end of the Double Barrel®. Liquid fuel is pumped to the burner from the fuel tank. The burner furnishes the energy to dry and heat the aggregate. It can be ordered to burn various types and grades of fuels. It also can be equipped with sound attenuating equipment for quieter operation.

RECYCLE BIN AND FEED SYSTEM

RAP is fed at the desired rate from the recycle-bin belt feeder onto an inclined RAP conveyor. It then passes through a scalping screen, which removes over-sized or extraneous material, then onto the RAP conveyor. At certain facilities, rejected material from the scalping screen may be sent to through a "lump breaker", which break apart oversize pieces. Output from the "lump breaker" is returned to the scalping screen. The feed conveyor carries the RAP over a weighbridge section and feeds it into the outer shell of the Double Barrel®.

DRAG CHAIN

The finished HMA is discharged from the Double Barrel® into the boot of the drag chain conveyor. This conveyor elevates the HMA to a "batcher" mounted above each storage bin. By dropping material into the surge bin in "batches", rather than a steady stream, segregation of the HMA is reduced. Any material, which is out of specification (as at start up and shut down), is dumped out the drag by pass chute for subsequent recycling.

STORAGE BIN AND TRUCK LOAD OUT

The storage bin serves two functions. First, they permit the plant to operate at an efficient steady rate with out regard for: the availability of trucks, or the need to frequently switch formulas (if the other mixes are stored in various silos). Secondly, they have the ability to store asphalt for several days without deterioration, by sealing out oxygen and preventing significant heat loss.

HOT LIQUID ASPHALT TANK AND FEED SYSTEM

A heated tank is used to store the AC. A pump and metering system transfer the AC to the outer shell of the Double Barrel®. The tank can be directly fired or heated by hot oil flowing through coils. If the tank is direct fired, coils within the tank are used to heat oil.

HOT OIL HEATER

Hot oil is used to heat the AC lines, silo cones, and other components, which must be kept hot. The hot oil can be furnished by a separate hot oil heater, or can be scavenged from a direct-fired AC storage tank.

BAGHOUSE AND DUST RETURN SYSTEM

Exhaust gases from the Double Barrel® travel to the baghouse, which is equipped with an inertial separator inlet section. Oversized particles are collected there. The air then is distributed to the bag chamber; where dust is collected on the outside of the bags. It passes through the built up dust cake, the bag fabric, and supporting wire bag cage up to the clean air plenum at the top of the baghouse.

Periodically, a short burst of high-pressure air is injected through a venturi at the top, discharge end, of each bag. The shock wave and back flow of gas through the bag causes most of the dust cake to drop off the outside. The dust falls into a hopper at the bottom of the baghouse. Screws in the hopper move the dust to a discharge point. It then passes through an air lock to transfer screws that carry the dust to the Double Barrel® for use in the mix.

GENERAL PROCESS DESCRIPTION
HOT MIX ASPHALT PLANT
Equipped with an ASTEC Double Barrel® Dryer Drum Coater

EXHAUST AIR DISCHARGE; FAN AND STACK

The flow of gas through the baghouse and Double Barrel® is induced by the exhaust fan. After passing through the fan, the flow of air is controlled by a modulating damper. It is then discharged to the environment through the exhaust stack. The exhaust stack is equipped with test ports, which can be easily accessed from the top of the baghouse.

ADDITIVES

Additives, dry or liquid, as required by a particular mix formula, are stored in special silos or tanks for precise metering into the process.

CONTROLS

The plant operator in the control house controls the process system. Computers automatically regulate the flow of virgin aggregate, based on the mix formula and production rate, set by the plant operator. The flow of material is synchronized so that the computer can adjust the flow of AC to correspond to the actual flow of virgin aggregate past the injection point.

The control system also provides both normal burner safety interlocks, controls to regulate the temperature of the finished product, and modulates the airflow through the Double Barrel®.

Criteria Pollutant Emission Rates

Customer: HK Contractors, Inc. **Location:** Idaho Falls, ID

Equipment Information:

Drum: **RDB-9640** Relocatable 8' x 40' Double Barrel Drum Mixer
Burner: **Phoenix Talon PT-100U-G-OH**; 100mBtu/hr gas/oil burner with heavy oil kit
PM Control: **RBH-68** Relocatable 68,194 ACFM Pulse Jet Baghouse;

Production Capacity:	350	ton/hr
	700000	lb/hr
Annual Production:	1000000	ton/year
Max RAP per mix:	50	%
RAP Usage per yr:	50	%
Avg AC per mix:	5	%
Total Airflow:	68194	ACFM
Standard Airflow:	34720	DSCFM
Heat Input:	100	mbtu/hr
Exhaust Temperature:	240	F
Exhaust Moisture:	32.5	%
Stack Dimensions:	30	height (ft)
	50.25	dia (in)
Stack Area:	13.77	sq.ft.
Stack Velocity:	82.5	ft/sec
	4951.6	ft/min
Stack Oxygen Percent:	10.5	actual
	3	corrected

NOTES:

Plant's rated capacity is based on production of 300° conventional-type surface mix with uniformly graded, clean virgin aggregate having maximum 5% composite moisture at 4700ft.

DSCFM = dry standard cubic feet/minute; airflow corrected to 68F, 1 atm, dry;

Heat input based on firing rate required for given production rate

Baghouse Specifications:

* BCS490 exhaust fan with VF 250hp sheave drive;
* Pulse jet cleaning with self-adjusting cycle to maintain 2-6inWC Dp across media;
* Inertial separator inlet section with 1inWC dP for coarse particle collection;
* (1024) 4-5/8" dia X 10' long 14-oz aramid bags in one compartment; 12,390 sq.ft. of cloth @ 5.5:1 air/cloth ratio (filtering velocity in fpm)

Maximum Production Data - NO RECYCLE:

Virgin material usage:	665000	lb/hr	332.5	ton/hr	950000 ton/year
Liquid AC usage:	35000	lb/hr	17.5	ton/hr	50000 ton/year
(8.5 lb/gal - avg density)	4118	gal/hr	11.8E+6	gal/yr	

Maximum Production Data - WITH RECYCLE:

Recycled material usage:	350000	lb/hr	175	ton/hr	250000 ton/year
Virgin material usage:	332500	lb/hr	166.25	ton/hr	240 ton/year
Liquid AC usage	17500	lb/hr	8.75	ton/hr	37500 ton/year
(8.5 lb/gal - avg density)	2059	gal/hr	8.8E+6	gal/yr	

Criteria Pollutant Emission Rates

Customer: **HK Contractors, Inc.** **Location:** **Idaho Falls, ID**

Equipment Information:

Drum: **RDB-9640** Relocatable 8' x 40' Double Barrel Drum Mixer
Burner: **Phoenix Talon PT-100U-G-OH**; 100mBtu/hr gas/oil burner with heavy oil kit
PM Control: **RBH-68** Relocatable 68,194 ACFM Pulse Jet Baghouse;

Particulate Emissions - Drum Mix Facility

Total PM inlet loading*:	28000	lb/hr	14	ton/hr			
Total PM outlet loading:	0.04	gr/dscf	11.90	lb/hr	17.01	ton/year	
Collection Efficiency:	99.96	%					
Collected Total PM:	27988	lb/hr	39983	ton/year			
**** Particulate inlet loading based on manufacturer data***							
Uncontrolled PM-10:	2240	lb/hr	3200	ton/year			
Controlled PM-10:	0.005	gr/dscf	1.47	lb/hr	2.10	ton/year	
PM-10 Collection Efficiency:	99.93	%					
PM-10 emission factors from AP-42 Table 11.1-4							
Uncontrolled PM-2.5:	525	lb/hr	750	ton/year			
Controlled PM-2.5:	0.003	gr/dscf	1.02	lb/hr	1.45	ton/year	
PM-2.5 Collection Efficiency:	99.81	%					
PM-2.5 emission factors from AP-42 Table 11.1-4							

Burner Fuels - Net Heating Values & Usage Rates:

Natural Gas:	1000	Btu/ft3			
	100.0E+3	ft^3/hr	285.7E+6	ft3/yr	
No. 2 Fuel Oil:	137000	Btu/gal	0.5	% sulfur	(by weight)
	730	gal/hr	2.086E+6	gal/yr	
Waste Fuel Oil:	138000	Btu/gal	0.5	% sulfur	(by weight)
	725	gal/hr	2.070E+6	gal/yr	

Pollutant Emission Rates

Customer: H K Contractors, Inc. **Location:** Idaho Falls, ID
Meteorological Data taken from: Idaho Falls, ID (43.514N 112.071W)

Equipment Information: Relocatable 8' Double Barrel Drum Mix HMA Facility

Production Capacity:	350	tph
	700000	lb/hr
Annual Production:	1000000	tpy
Max RAP per mix:	50	%
RAP Usage per year:	50	%
Avg AC per mix:	5	%

NOTE: Plant's rated capacity is based on production of conventional-type surface mix with uniformly graded, clean virgin aggregate having maximum 5% composite moisture.

Maximum Production Data - NO RECYCLE:

Virgin material usage:	665000	lb/hr	332.5	tph	950000	tpy
Liquid AC usage:	35000	lb/hr	17.5	tph	50000	tpy
(8.5 lb/gal - avg density)	4118	gal/hr	11.76E+6	gal/year		

Maximum Production Data - WITH RECYCLE:

Recycled material usage:	350000	lb/hr	175	tph	250000	tpy
Virgin material usage:	332500	lb/hr	166.25	tph	712500	tpy
Liquid AC usage:	17500	lb/hr	8.75	tph	37500	tpy
(8.5 lb/gal - avg density)	2059	gal/hr	8.82E+6	gal/year		

Fugitive Dust from Virgin Aggregate Handling & Storage

s, material silt content	3.9	%	(from AP-42 Ch. 13.2 Table 13.2.4-2)
k, particle size multiplier	0.74		(for particles < 30 μm)
k_{10}, particle size multiplier	0.35		(for particles < 10 μm)
$k_{2.5}$, particle size multiplier	0.11		(for particles < 2.5 μm)
U, mean wind speed	7.97	mph	
M, material moisture content	5	%	

Total Fugitive PM	1.20E-03	lb/ton	0.40	lb/hr	0.57	ton/yr
Fugitive PM < 10 mm	5.69E-04	lb/ton	0.19	lb/hr	0.27	ton/yr
Fugitive PM < 2.5 mm	1.79E-04	lb/ton	0.06	lb/hr	0.08	ton/yr

NOTE: PM-10 & PM-2.5 are percentages of the total fugitive PM generated, not additional emissions

Fugitive Dust from Virgin Aggregate Conveyance

S, screen emission factor	0.025	lb/ton	(Total PM)
S_{10}, screen emission factor	0.0087	lb/ton	(Total PM-10)
CTP, conveyor transfer point	0.003	lb/ton	(Total PM)
CTP_{10}, conveyor transfer point	0.0011	lb/ton	(Total PM-10)
N, number of conveyors	5		

Total Fugitive PM	13.30	lb/hr	19.00	ton/yr
Total Fugitive PM-10	4.72	lb/hr	6.75	ton/yr

Fugitive Dust from Recycled Material Handling & Storage

s, material silt content	3.9	%	(from AP-42 Ch. 13.2 Table 13.2.4-2)
k, particle size multiplier	0.74		(for particles < 30 μm)
k_{10}, particle size multiplier	0.35		(for particles < 10 μm)
$k_{2.5}$, particle size multiplier	0.11		(for particles < 2.5 μm)
U, mean wind speed	7.97	mph	
M, material moisture content	5	%	

Total Fugitive PM	1.20E-03	lb/ton	0.21	lb/hr	0.15	ton/yr
Fugitive PM < 10 mm	5.69E-04	lb/ton	0.10	lb/hr	0.07	ton/yr
Fugitive PM < 2.5 mm	1.79E-04	lb/ton	0.03	lb/hr	0.02	ton/yr

NOTE: PM-10 & PM-2.5 are percentages of the total fugitive PM generated, not additional emissions

Fugitive Dust from Recycled Materials Conveyance

S, screen emission factor	0.025	lb/ton	(Total PM)
S_{10}, screen emission factor	0.0087	lb/ton	(Total PM-10)
CTP, conveyor transfer point	0.003	lb/ton	(Total PM)
CTP_{10}, conveyor transfer point	0.0011	lb/ton	(Total PM-10)
N, number of conveyors	2		

Total Fugitive PM	6.37	lb/hr	3.88	ton/yr
Total Fugitive PM-10	1.91	lb/hr	1.36	ton/yr

Pollutant Emission Rates

Customer: **H K Contractors, Inc.** **Location:** **Idaho, Falls, ID**

Equipment Information:
Unit: **CEI-2400** 2.453mBtu/hr Jacketed Firebox Hot oil Heater
Burner: **Powerflame C2-GO-20B** combination gas/oil burner

Total Airflow:	647	ACFM	Stack Dimensions:	7.3	height (ft)
Standard Airflow:	290	DSCFM		10	dia (in)
Heat Input:	2.82	mbtu/hr	Stack Area:	0.55	sq.ft.
Exhaust Temperature:	600	F	Stack Velocity:	19.8	ft/sec
Exhaust Moisture:	10	%		1186.3	ft/min

NOTE: DSCFM = dry, standard cubic feet per minute; airflow @ 68F, 1 atm, dry

Burner Fuels - Net Heating Values & Usage Rates:

Natural Gas: 1000 Btu/ft3; 2820 ft^3/hr; 24.7E+6 ft^3/year

Criteria Pollutants - *(natural gas)*

POLLUTANT	MW	FACTOR lb/10^6 cu.ft.	lb/hr	ton/year	
PM		7.6	0.021	0.09	*Emission factors from AP-42 Table 1.4-2*
SO2	64.06	0.6	0.002	0.01	
CO	28.01	8.9	0.025	0.11	*Emission factor from AP-42 Table 11.1-13*
NOx (as NO_2)	46.05	100	0.282	1.24	*Emission factors from AP-42 Table 1.4-2*
VOC (as C3H3)	44.1	5.5	0.016	0.07	

Organic Compounds - *(natural gas)*

POLLUTANT	CASRN	MW	FACTOR lb/10^6 cu.ft.	lb/hr	ton/yr	
2-Methylnaphthalene	91-57-6	142.2	2.40E-05	6.8E-08	3.0E-07	
3-Methylchloranthrene	56-49-5	268.4	1.80E-06	5.1E-09	2.2E-08	
Acenaphthene	83-32-9	154.21	1.80E-06	5.1E-09	2.2E-08	
Acenaphthylene	208-96-8	152.2	1.80E-06	5.1E-09	2.2E-08	
Anthracene	120-12-7	178.23	2.40E-06	6.8E-09	3.0E-08	
Benz(a)anthracene	56-55-3	228.3	1.80E-06	5.1E-09	2.2E-08	
Benzene	71-43-2	78.1	2.10E-03	5.9E-06	2.6E-05	
Benzo(a)pyrene	50-32-8	176.5	1.20E-06	3.4E-09	1.5E-08	
Benzo(b,k) fluoranthene	205-99-2 207-08-9	252.3	1.80E-06	5.1E-09	2.2E-08	
Benzo(g,h,I) perylene	191-24-2	276.3	1.20E-06	3.4E-09	1.5E-08	
Butane	106-97-8	58.1	2.10	5.9E-03	2.6E-02	
Chrysene	218-01-9	228.3	1.80E-06	5.1E-09	2.2E-08	
Dibenzo(a,h) anthracene	53-70-3	278.4	1.20E-06	3.4E-09	1.5E-08	*Emission Factors from AP-42 Table 1.4-3*
Dichlrobenzene	25321-22-6	147.0	1.20E-03	3.4E-06	1.5E-05	
Ethane			3.10E+00	8.7E-03	3.8E-02	
Fluoranthene	206-44-0	202.3	3.00E-06	8.5E-09	3.7E-08	
Fluorene	86-73-7	166.2	2.80E-06	7.9E-09	3.5E-08	
Formaldehyde	50-00-0	30.0	7.50E-02	2.1E-04	9.3E-04	
Hexane	110-54-3	86.18	1.80E+00	5.1E-03	2.2E-02	
Indo(1,2,3-cd) pyrene	193-39-5	276.3	1.80E-06	5.1E-09	2.2E-08	
Naphthalene	91-20-3	127.2	6.10E-04	1.7E-06	7.5E-06	
Pentane	109-66-0	72.15	2.60E+00	7.3E-03	3.2E-02	
Phenanthrene	85-01-8	178.2	1.70E-05	4.8E-08	2.1E-07	
Propane	74-98-6	44.1	1.60E+00	4.5E-03	2.0E-02	
Pyrene	129-00-0	202.3	5.00E-06	1.4E-08	6.2E-08	
Toluene	108-88-3	92.1	3.40E-03	9.6E-06	4.2E-05	

Fugitive Blue Smoke Emissions

CUSTOMER: **H K Contracting, Inc.** **LOCATION:** **Idaho Falls, ID**

Equipment Information:

Drum: **RDB-9640** Relocatable 8' x 40' Double Barrel Drum Mixer
Burner: **Phoenix Talon PT-100U-G-OH**; 100mBtu/hr gas/oil burner with heavy oil kit
Controls: Scavenge system to duct silo fillilng emissions to main plant burner for incineration

Production capacity:	350	tph
Annual Production	1000000	tons
Asphalt Volatility (V):	-0.50	
Mix Temp (F):	315	F

Plant's rated capacity is based on production of 300°F conventional-type surface mix with uniformly graded, clean virgin aggregate having maximum 5% composite moisture at sealevel.

Plant Load-out Emission Factors:

Total PM:	EF = 0.000181+0.00141(-V)e^((0.0251)(T+460)-20.43)	0.000446	lb/ton
Organic PM:	EF = 0.00141(-V)e^((0.0251)(T+460)-20.43)	0.000265	lb/ton
TOC	EF = 0.0172(-V)e^((0.0251)(T+460)-20.43)	0.003236	lb/ton
CO	EF = 0.00558(-V)e^((0.0251)(T+460)-20.43)	0.001050	lb/ton

Plant Load-out Emission Rates:

Total PM:	0.156	lb/hr	446.3	lb/year	0.223	ton/year	uncontrolled rates
Organic PM:	0.093	lb/hr	265.3	lb/year	0.133	ton/year	see below
TOC	1.133	lb/hr	3235.8	lb/year	1.618	ton/year	see below
CO	0.367	lb/hr	1049.7	lb/year	0.525	ton/year	uncontrolled

Silo Filling Emission Factors:

Total PM:	EF = 0.000332 + 0.00105(-V)e^((0.0251)(T+460)-20.43)	0.000530	lb/ton
Organic PM:	EF = 0.00105(-V)e^((0.0251)(T+460)-20.43)	0.000198	lb/ton
TOC	EF = 0.0504(-V)e^((0.0251)(T+460)-20.43)	0.009482	lb/ton
CO	EF = 0.00488(-V)e^((0.0251)(T+460)-20.43)	0.000918	lb/ton

Silo Filling Emission Rates:

Total PM:	0.185	lb/hr	529.5	lb/year	0.265	ton/year	uncontrolled values
Organic PM:	0.069	lb/hr	197.5	lb/year	0.099	ton/year	see below
TOC	3.319	lb/hr	9481.5	lb/year	4.741	ton/year	see below
CO	0.321	lb/hr	918.1	lb/year	0.459	ton/year	uncontrolled

Fugitive Blue Smoke Emissions

CUSTOMER: **H K Contracting, Inc.** **LOCATION:** **Idaho Falls, ID**

Equipment Information:

Drum: **RDB-9640** Relocatable 8' x 40' Double Barrel Drum Mixer
Burner: **Phoenix Talon PT-100U-G-OH**; 100mBtu/hr gas/oil burner with heavy oil kit
Controls: Scavenge system to duct silo fillilng emissions to main plant burner for incineration

Pollutant	CAS #	Uncontrolled Emissions						Controlled	
		Load-out			Silo Filling			Silo Filling	
		EF (%)	lb/hr	lb/year	EF (%)	lb/hr	lb/year	lb/hr	lb/year
Acenaphthene	83-32-9	0.26	2.41E-04	0.690	0.47	3.25E-04	0.928	1.62E-05	0.046
Acenaphhthylene	208-96-8	0.028	2.60E-05	0.074	0.014	9.68E-06	0.028	4.84E-07	0.001
Anthracene	120-1207	0.07	6.50E-05	0.186	0.13	8.99E-05	0.257	4.49E-06	0.013
Benzo(a)anthracene	56-55-3	0.019	1.76E-05	0.050	0.056	3.87E-05	0.111	1.94E-06	0.006
Benzo(b)fluoranthene	205-99-2	0.0076	7.06E-06	0.020	**Not Detected**			**Not Detected**	
Benzo(k)fluoranthene	207-08-9	0.0022	2.04E-06	0.006	**Not Detected**			**Not Detected**	
Benzo(g,h,i)perylene	191-24-2	0.0019	1.76E-06	0.005	**Not Detected**			**Not Detected**	
Benzo(a)pyrene	50-32-8	0.0023	2.14E-06	0.006	**Not Detected**			**Not Detected**	
Benzo(e)pyrene	192-97-2	0.0078	7.24E-06	0.021	0.0095	6.57E-06	0.019	3.28E-07	0.001
Chrysene	218-01-9	0.103	9.56E-05	0.273	0.21	1.45E-04	0.415	7.26E-06	0.021
Dibenz(a,h)anthracene	53-40-3	0.00037	3.44E-07	0.001	**Not Detected**			**Not Detected**	
Fluoranthene	206-44-0	0.05	4.64E-05	0.133	0.15	1.04E-04	0.296	5.19E-06	0.015
Indeno(1,2,3-cd)pyrene	193-39-5	0.00047	4.36E-07	0.001	**Not Detected**			**Not Detected**	
2-Methylnaphthalene	91-57-6	2.38	2.21E-03	6.313	5.27	3.64E-03	10.410	1.82E-04	0.520
Naphthalene	91-20-3	1.25	1.16E-03	3.316	1.82	1.26E-03	3.595	6.29E-05	0.180
Perylene	198-55-0	0.022	2.04E-05	0.058	0.03	2.07E-05	0.059	1.04E-06	0.003
Phenanthrene	85-01-8	0.81	7.52E-04	2.149	1.8	1.24E-03	3.556	6.22E-05	0.178
Pyrene	129-00-0	0.15	1.39E-04	0.398	0.44	3.04E-04	0.869	1.52E-05	0.043
TOTAL PAH HAPs		5.93	5.51E-03	15.730	11.4	7.88E-03	22.519	3.94E-04	1.126
Phenol	108.95.2	1.18	1.10E-03	3.130	**Not Detected**			**Not Detected**	

Fugitive Blue Smoke Emissions

CUSTOMER: **H K Contracting, Inc.** **LOCATION:** **Idaho Falls, ID**

Equipment Information:

Drum: **RDB-9640** Relocatable 8' x 40' Double Barrel Drum Mixer
Burner: **Phoenix Talon PT-100U-G-OH**; 100mBtu/hr gas/oil burner with heavy oil kit
Controls: Scavenge system to duct silo fillilng emissions to main plant burner for incineration

Pollutant	CAS #	Uncontrolled Emissions						Controlled	
		Load-out Emissions			Silo Filling Emissions			Silo Filling	
		EF (%)	lb/hr	lb/year	EF (%)	lb/hr	lb/year	lb/hr	lb/year
VOC		94	1.06E+00	3042	100	3.32	9482	0.166	474.1
Methane	74-82-8	6.5	7.36E-02	210.32	0.26	8.63E-03	24.7	4.31E-04	1.2
Acetone	67-64-1	0.046	5.21E-04	1.49	0.055	1.83E-03	5.2	9.13E-05	0.26
Ethylene	74-85-1	0.71	8.04E-03	22.97	1.1	3.65E-02	104.3	1.83E-03	5.2
Total non-VOC/non-HAPs		7.3	8.27E-02	236.21	1.4	4.65E-02	132.7	2.32E-03	6.6
Benzene	71-43-2	0.052	5.89E-04	1.68	0.032	1.06E-03	3.0	5.31E-05	0.15
Bromomethane	74-83-9	0.0096	1.09E-04	0.31	0.0049	1.63E-04	0.46	8.13E-06	0.02
2-Butanone	78-93-3	0.049	5.55E-04	1.59	0.039	1.29E-03	3.7	6.47E-05	0.18
Carbon Disulfide	75-15-0	0.013	1.47E-04	0.42	0.016	5.31E-04	1.5	2.65E-05	0.08
Chloroethane	75-00-3	0.00021	2.38E-06	0.01	0.004	1.33E-04	0.38	6.64E-06	0.02
Chloromethane	74-87-3	0.015	1.70E-04	0.49	0.023	7.63E-04	2.2	3.82E-05	0.11
Cumene	92-82-8	0.11	1.25E-03	3.56	**Not Detected**			**Not Detected**	
Ethylbenzene	100-41-4	0.28	3.17E-03	9.06	0.038	1.26E-03	3.6	6.31E-05	0.18
Formaldehyde	50-00-0	0.088	9.97E-04	2.85	0.69	2.29E-02	65.4	1.14E-03	3.3
n-Hexane	100-54-3	0.15	1.70E-03	4.85	0.1	3.32E-03	9.5	1.66E-04	0.47
Isooctane	540-84-1	0.0018	2.04E-05	0.06	0.00031	1.03E-05	0.03	5.14E-07	1.47E-03
Methylene Chloride	75-09-2	**Not Detected**			0.00027	8.96E-06	0.03	4.48E-07	1.28E-03
Styrene	100-42-5	0.0073	8.27E-05	0.24	0.0054	1.79E-04	0.51	8.96E-06	0.03
Tetrachloroethane	127-184-4	0.0077	8.72E-05	0.25	**Not Detected**			**Not Detected**	
Toluene	100-88-3	0.21	2.38E-03	6.80	0.062	2.06E-03	5.9	1.03E-04	0.3
Trichlorofluoromethane	75-69-4	0.0013	1.47E-05	0.04	**Not Detected**			**Not Detected**	
m-/p-Xylene	1330-20-7	0.41	4.64E-03	13.27	0.2	6.64E-03	19.0	3.32E-04	0.95
o-Xylene	95-47-6	0.08	9.06E-04	2.59	0.057	1.89E-03	5.4	9.46E-05	0.27
Total Volatile Organic HAPs		1.5	1.70E-02	48.54	1.3	4.31E-02	123.3	2.16E-03	6.2

Criteria Pollutant Emission Rates

Customer: H K Contractors, Inc. **Location:** Idaho Falls, ID

Equipment Information:
Drum: **RDB-9640** Relocatable 8' x 40' Double Barrel Drum Mixer
Burner: **PhoenixCoal PC-100**; 100mBtu/hr combination burner with coal capabilities
PM Control: **RBH-68** Relocatable 68,194 ACFM Pulse Jet Baghouse;

Production Capacity:	290	ton/hr
	580000	lb/hr
Annual Production:	600000	ton/year
Max RAP per mix:	50	%
RAP Usage per yr:	50	%
Avg AC per mix:	5	%
Total Airflow:	68194	ACFM
Standard Airflow:	34720	DSCFM
Heat Input:	75	mbtu/hr
Exhaust Temperature:	240	F
Exhaust Moisture:	32.5	%
Stack Dimensions:	30	height (ft)
	45.625	dia (in)
Stack Area:	11.35	sq.ft.
Stack Velocity:	100.1	ft/sec
	6006.4	ft/min
Stack Oxygen Percent:	12.5	actual
	3	corrected

NOTES:
Plant's rated capacity is based on production of 300° conventional-type surface mix with uniformly graded, clean virgin aggregate having maximum 5% composite moisture at 4700ft.
DSCFM = dry standard cubic feet/minute; airflow corrected to 68F, 1 atm, dry;
Heat input based on firing rate required for given production rate

Baghouse Specifications:
* BCS-542 exhaust fan with VF 250hp sheave drive;
* Pulse jet cleaning with self-adjusting cycle to maintain 2-6inWC Dp across media;
* Inertial separator inlet section with 1inWC dP for coarse particle collection;
* (1024) 4-5/8" dia X 10' long 14-oz aramid bags in one compartment; 12,390 sq.ft. of cloth @ 5.5:1 air/cloth ratio (filtering velocity in fpm)

Maximum Production Data - NO RECYCLE:

Virgin material usage:	551000	lb/hr	275.5	ton/hr	570000 ton/year
Liquid AC usage: (8.5 lb/gal - avg density)	29000	lb/hr	14.5	ton/hr	30000 ton/year
	3412	gal/hr	7.1E+6	gal/yr	

Maximum Production Data - WITH RECYCLE:

Recycled material usage:	290000	lb/hr	145	ton/hr	150000 ton/year
Virgin material usage:	275500	lb/hr	137.75	ton/hr	240 ton/year
Liquid AC usage (8.5 lb/gal - avg density)	14500	lb/hr	7.25	ton/hr	22500 ton/year
	1706	gal/hr	5.3E+6	gal/yr	

Criteria Pollutant Emission Rates

Customer: H K Contractors, Inc. **Location:** Idaho Falls, ID

Equipment Information:

Drum: **RDB-9640** Relocatable 8' x 40' Double Barrel Drum Mixer
Burner: **PhoenixCoal PC-100**; 100mBtu/hr combination burner with coal capabilities
PM Control: **RBH-68** Relocatable 68,194 ACFM Pulse Jet Baghouse;

Particulate Emissions - Drum Mix Facility

Total PM inlet loading*:	23803	lb/hr	12	ton/hr		
Total PM outlet loading:	0.04	gr/dscf	11.90	lb/hr	12.31	ton/year
Collection Efficiency:	99.95	%				
Collected Total PM:	23791	lb/hr	24612	ton/year		
**** Particulate inlet loading based on manufacturer data***						
Uncontrolled PM-10:	1856	lb/hr	1920	ton/year		
Controlled PM-10:	0.00	gr/dscf	1.22	lb/hr	1.26	ton/year
PM-10 Collection Efficiency:	99.93	%				
PM-10 emission factors from AP-42 Table 11.1-4						
Uncontrolled PM-2.5:	435	lb/hr	450	ton/year		
Controlled PM-2.5:	0.003	gr/dscf	0.84	lb/hr	0.87	ton/year
PM-2.5 Collection Efficiency:	99.81	%				
PM-2.5 emission factors from AP-42 Table 11.1-4						

Burner Fuels - Net Heating Values & Usage Rates:

No. 2 Fuel Oil:	137000	Btu/gal	0.5	% sulfur	7.21	lb/gal
	60	gal/hr	124.6E+3	gal/yr		
Pulverized Coal:	10788	Btu/lb	0.75	Sulfur %	19.5	Ash %
	3.1	ton/hr	6401	ton/year		
Waste Fuel Oil:	138000	Btu/gal	0.5	% sulfur	7.4	lb/gal
	60	gal/hr	123.7E+3	gal/yr		
Pulverized Coal:	10788	Btu/lb	0.75	Sulfur %	19.5	Ash %
	3.1	ton/hr	6401	ton/year		

No. 2 FUEL OIL COMBUSTION

POLLUTANT		CASRN	MW	FACTOR lb/10^3 gal	PC FACTOR lb/ton	lb/hr	ton/year
Criteria Pollutants Tables 11.1-7 & 11.1-8	SO_2	7446-09-5	64.06	0.02	0.02	43.7	45.2
	CO	630-08-0	28.01	71.25	28.5	92.5	95.6
	NO_x (as NO_2)	10102-44-0	46.05	30.175	26.75	84.6	87.5
	VOC (as C_3H_8)	74-98-6	44.1	17.5	3.65	12.3	12.8

POLLUTANT		CASRN	MW	FACTOR lb/ton	lb/hr	ton/year
NON-PAH HAPS Table 11.1-10	Acetaldehyde	75-07-0	44.05	0.0013	0.38	0.39
	Acrolein	107-02-8	56.1	2.60E-05	0.01	0.01
	Benzene	71-43-2	78.11	0.00039	0.11	0.12
	Ethylbenzene	100-41-4	106.17	0.00024	0.07	0.07
	Formaldehyde	50-00-0	30.03	0.0031	0.90	0.93
	Hexane	110-54-3	86.18	0.00092	0.27	0.28
	Isooctane	540-84-1	114.23	4.00E-05	0.01	1.2E-02
	Methyl Ethyl Ketone	78-93-3	72.1	2.00E-05	5.8E-03	6.0E-03
	Propionaldehyde	123-38-6	58.1	0.00013	0.04	0.04
	Quinone	106-51-4	108.1	0.00016	0.05	0.05
	Methyl Chloroform	71-55-6	133.4	4.80E-05	1.4E-02	1.4E-02
	Toluene	108-88-3	92.14	0.0029	0.84	0.87
	Xylene	1330-20-7	106.17	0.0002	0.06	0.06
	TOTAL NON-PAH HAPS			0.0095	2.76	2.85
PAH HAPS Table 11.1-10	2-Methylnaphthalene	91-57-6	142.2	1.70E-04	4.93E-02	5.10E-02
	Acenaphthene	83-32-9	154.21	1.40E-06	4.06E-04	4.20E-04
	Acenaphthylene	208-96-8	152.2	2.20E-05	6.38E-03	6.60E-03
	Anthracene	120-12-7	178.23	3.10E-06	8.99E-04	9.30E-04
	Benzo(a)anthracene	56-55-3	228.3	2.10E-07	6.09E-05	6.30E-05
	Benzo(a)pyrene	50-32-8	176.5	9.80E-09	2.84E-06	2.94E-06
	Benzo(b)fluoranthene	205-99-2	252.3	1.00E-07	2.90E-05	3.00E-05
	Benzo(e)pyrene	192-97-2	178	1.10E-07	3.19E-05	3.30E-05
	Benzo(g,h,i)perylene	191-24-2	276.3	4.00E-08	1.16E-05	1.20E-05
	Benzo(k)fluoranthene	207-08-9	252.3	4.10E-08	1.19E-05	1.23E-05
	Chrysene	218-01-9	228.3	1.80E-07	5.22E-05	5.40E-05
	Fluoranthene	206-44-0	202.3	6.10E-07	1.77E-04	1.83E-04
	Fluorene	86-73-7	166.2	1.10E-05	3.19E-03	3.30E-03
	Indeno(1,2,3-cd)pyrene	193-39-5	276.3	7.00E-09	2.03E-06	2.10E-06
	naphthalene	91-20-3	127.17	6.50E-04	0.19	0.20
	Perylene	198-55-0	252.1	8.80E-09	2.55E-06	2.64E-06
	Phenanthrene	85-01-8	178.2	2.30E-05	6.67E-03	6.90E-03

No. 2 FUEL OIL COMBUSTION

	Pyrene	129-00-0	202.3	3.00E-06	8.70E-04	9.00E-04
	TOTAL PAH HAPS			0.00088	0.26	0.26
	TOTAL HAPS			0.01	2.90	3.00
NON-HAP Organic Compounds **Table 11.1-10**	Acetone	67-64-1	58.08	0.00083	0.24	0.25
	Benzaldehyde	100-52-7	106.1	0.00011	3.2E-02	3.3E-02
	Butane	106-97-8	58.1	0.00067	0.19	0.20
	Butyraldehyde	78-84-2	72.1	0.00016	0.05	0.05
	Crotonaldehyde	4170-30-3	70.1	8.60E-05	2.5E-02	2.6E-02
	Ethylene	74-85-1	28.05	0.007	2.03	2.10
	Heptane	142-82-5	100.2	0.0094	2.73	2.82
	Hexanal	66-25-1	100.2	0.00011	3.2E-02	3.3E-02
	Isovaleraldehyde	590-86-3	86.1	3.20E-05	9.3E-03	9.6E-03
	2-Methyl-1-pentane	763-29-1	84.2	0.004	1.16	1.20
	2-Methyl-2-butene	513-35-9	70.1	0.00058	0.17	0.17
	3-Methylpentane	96-14-0	86.2	0.00019	0.06	0.06
	l-pentene	109-67-1	70.13	0.0022	0.64	0.66
	n-Pentane	109-66-0	72.15	0.00021	0.06	0.06
	Valeraldehyde	110-62-3	86.1	6.70E-05	1.9E-02	2.0E-02
	TOTAL NON-HAP ORGANICS			0.026	7.54	7.80
Trace Metals **Table 11.1-12**	Antimony	7440-36-0	121.8	1.80E-07	5.22E-05	5.40E-05
	Arsenic	7440-38-2	74.9	5.60E-07	1.62E-04	1.68E-04
	Barium	7440-39-3	137.3	5.80E-06	1.68E-03	1.74E-03
	Cadmium	7440-43-9	112.4	4.10E-07	1.19E-04	1.23E-04
	Chromium	7440-47-3	52.0	5.50E-06	1.60E-03	1.65E-03
	Cobalt	7440-48-4	58.9	2.60E-08	7.54E-06	7.80E-06
	Copper	7440-50-8	63.5	3.10E-06	8.99E-04	9.30E-04
	Hexavalent Chromium	18540-29-9	52.0	4.50E-07	1.31E-04	1.35E-04
	Lead	7439-92-1	207.2	1.50E-05	4.35E-03	4.50E-03
	Manganese	7439-96-5	54.9	7.70E-06	2.23E-03	2.31E-03
	Mercury	7439-97-6	200.6	2.60E-06	7.54E-04	7.80E-04
	Nickel	7440-02-0	58.7	6.30E-05	1.83E-02	1.89E-02
	Phosphorus	7723-14-0	31.0	2.80E-05	8.12E-03	8.40E-03
	Selenium	7782-49-2	79.0	3.50E-07	1.02E-04	1.05E-04
	Silver	7440-22-4	107.9	4.80E-07	1.39E-04	1.44E-04
	Thallium	7440-28-0	204.4	4.10E-09	1.19E-06	1.23E-06
	Zinc	7440-66-6	65.4	6.10E-05	1.77E-02	1.83E-02

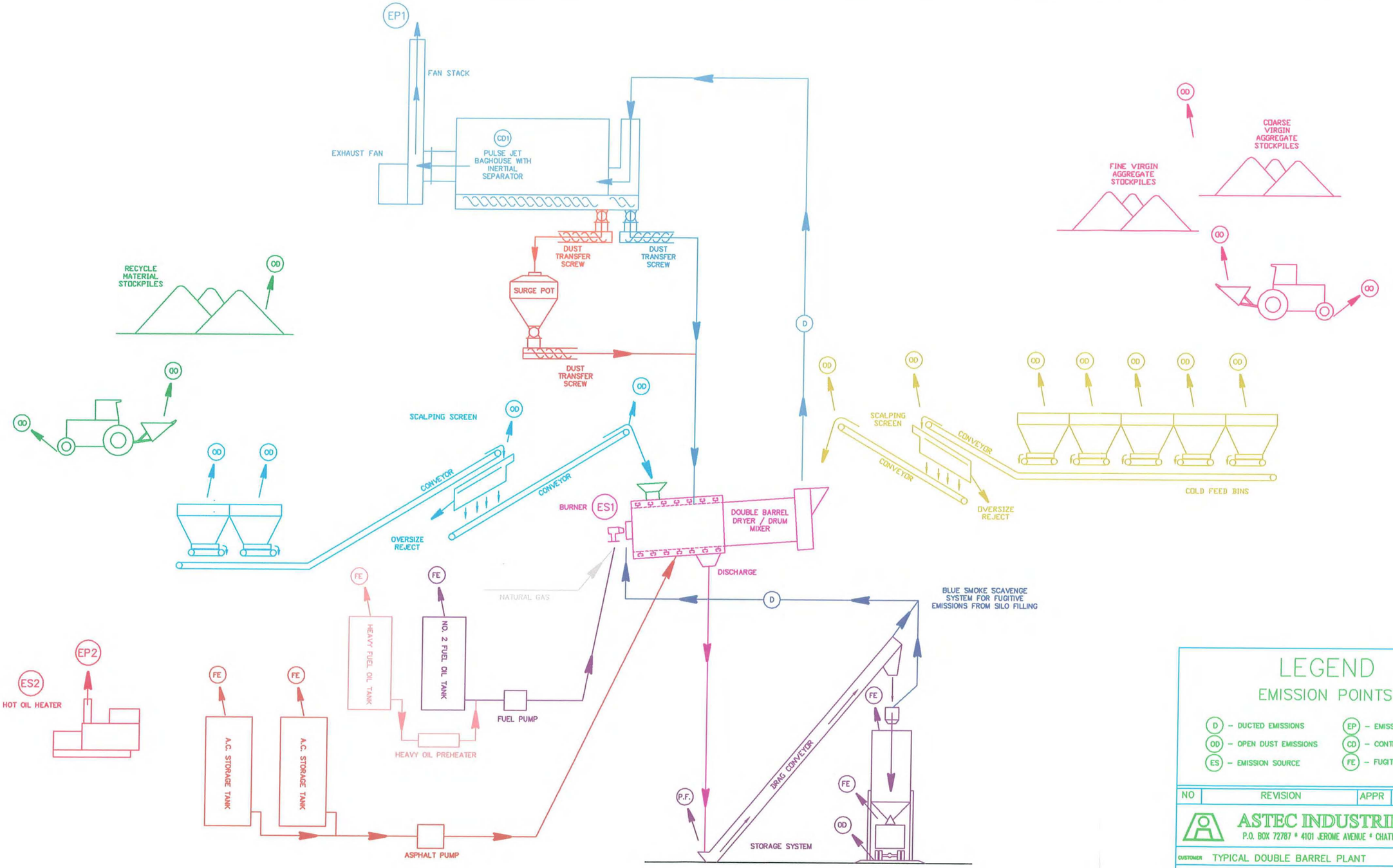
HEAVY / RECYCLED FUEL OIL COMBUSTION

POLLUTANT		CASRN	MW	FACTOR lb/10^3 gal	PC FACTOR lb/ton	lb/hr	ton/year
Criteria Pollutants Tables 11.1-7 & 11.1-8	SO_2	7446-09-5	64.06	0.02	0.02	43.7	45.2
	CO	630-08-0	28.01	71.25	28.5	92.5	95.6
	NO_x (as NO_2)	10102-44-0	46.05	30.175	26.75	84.6	87.5
	VOC (as C_3H_8)	74-98-6	44.1	17.5	3.65	12.3	12.8

POLLUTANT		CASRN	MW	FACTOR lb/ton	lb/hr	ton/year
NON-PAH HAPS Table 11.1-10	Acetaldehyde	75-07-0	44.05	0.0013	0.38	0.39
	Acrolein	107-02-8	56.1	2.60E-05	0.01	0.01
	Benzene	71-43-2	78.11	0.00039	0.11	0.12
	Ethylbenzene	100-41-4	106.17	0.00024	0.07	0.07
	Formaldehyde	50-00-0	30.03	0.0031	0.90	0.93
	Hexane	110-54-3	86.18	0.00092	0.27	0.28
	Isooctane	540-84-1	114.23	4.00E-05	0.01	1.2E-02
	Methyl Ethyl Ketone	78-93-3	72.1	2.00E-05	5.8E-03	6.0E-03
	Propionaldehyde	123-38-6	58.1	0.00013	0.04	0.04
	Quinone	106-51-4	108.1	0.00016	0.05	0.05
	Methyl Chloroform	71-55-6	133.4	4.80E-05	1.4E-02	1.4E-02
	Toluene	108-88-3	92.14	0.0029	0.84	0.87
	Xylene	1330-20-7	106.17	0.0002	0.06	0.06
	TOTAL NON-PAH HAPS			0.0095	2.76	2.85
PAH HAPS Table 11.1-10	2-Methylnaphthalene	91-57-6	142.2	1.70E-04	4.93E-02	5.10E-02
	Acenaphthene	83-32-9	154.21	1.40E-06	4.06E-04	4.20E-04
	Acenaphthylene	208-96-8	152.2	2.20E-05	6.38E-03	6.60E-03
	Anthracene	120-12-7	178.23	3.10E-06	8.99E-04	9.30E-04
	Benzo(a)anthracene	56-55-3	228.3	2.10E-07	6.09E-05	6.30E-05
	Benzo(a)pyrene	50-32-8	176.5	9.80E-09	2.84E-06	2.94E-06
	Benzo(b)fluoranthene	205-99-2	252.3	1.00E-07	2.90E-05	3.00E-05
	Benzo(e)pyrene	192-97-2	178	1.10E-07	3.19E-05	3.30E-05
	Benzo(g,h,i)perylene	191-24-2	276.3	4.00E-08	1.16E-05	1.20E-05
	Benzo(k)fluoranthene	207-08-9	252.3	4.10E-08	1.19E-05	1.23E-05
	Chrysene	218-01-9	228.3	1.80E-07	5.22E-05	5.40E-05
	Fluoranthene	206-44-0	202.3	6.10E-07	1.77E-04	1.83E-04
	Fluorene	86-73-7	166.2	1.10E-05	3.19E-03	3.30E-03
	Indeno(1,2,3-cd)pyrene	193-39-5	276.3	7.00E-09	2.03E-06	2.10E-06
	naphthalene	91-20-3	127.17	6.50E-04	0.19	0.20
	Perylene	198-55-0	252.1	8.80E-09	2.55E-06	2.64E-06
	Phenanthrene	85-01-8	178.2	2.30E-05	6.67E-03	6.90E-03
	Pyrene	129-00-0	202.3	3.00E-06	8.70E-04	9.00E-04
	TOTAL PAH HAPS			0.00088	0.26	0.26
	TOTAL HAPS			0.01	2.90	3.00
NON-HAP	Acetone	67-64-1	58.08	0.00083	0.24	0.25
	Benzaldehyde	100-52-7	106.1	0.00011	3.2E-02	3.3E-02
	Butane	106-97-8	58.1	0.00067	0.19	0.20
	Butyraldehyde	78-84-2	72.1	0.00016	0.05	0.05
	Crotonaldehyde	4170-30-3	70.1	8.60E-05	2.5E-02	2.6E-02
	Ethylene	74-85-1	28.05	0.007	2.03	2.10
	Heptane	142-82-5	100.2	0.0094	2.73	2.82

HEAVY / RECYCLED FUEL OIL COMBUSTION

Organic Compounds **Table 11.1-10**	Hexanal	66-25-1	100.2	0.00011	3.2E-02	3.3E-02
	Isovaleraldehyde	590-86-3	86.1	3.20E-05	9.3E-03	9.6E-03
	2-Methyl-1-pentane	763-29-1	84.2	0.004	1.16	1.20
	2-Methyl-2-butene	513-35-9	70.1	0.00058	0.17	0.17
	3-Methylpentane	96-14-0	86.2	0.00019	0.06	0.06
	l-pentene	109-67-1	70.13	0.0022	0.64	0.66
	n-Pentane	109-66-0	72.15	0.00021	0.06	0.06
	Valeraldehyde	110-62-3	86.1	6.70E-05	1.9E-02	2.0E-02
	TOTAL NON-HAP ORGANICS			0.026	7.54	7.80
Trace Metals **Table 11.1-12**	Antimony	7440-36-0	121.8	1.80E-07	5.22E-05	5.40E-05
	Arsenic	7440-38-2	74.9	5.60E-07	1.62E-04	1.68E-04
	Barium	7440-39-3	137.3	5.80E-06	1.68E-03	1.74E-03
	Cadmium	7440-43-9	112.4	4.10E-07	1.19E-04	1.23E-04
	Chromium	7440-47-3	52.0	5.50E-06	1.60E-03	1.65E-03
	Cobalt	7440-48-4	58.9	2.60E-08	7.54E-06	7.80E-06
	Copper	7440-50-8	63.5	3.10E-06	8.99E-04	9.30E-04
	Hexavalent Chromium	18540-29-9	52.0	4.50E-07	1.31E-04	1.35E-04
	Lead	7439-92-1	207.2	1.50E-05	4.35E-03	4.50E-03
	Manganese	7439-96-5	54.9	7.70E-06	2.23E-03	2.31E-03
	Mercury	7439-97-6	200.6	2.60E-06	7.54E-04	7.80E-04
	Nickel	7440-02-0	58.7	6.30E-05	1.83E-02	1.89E-02
	Phosphorus	7723-14-0	31.0	2.80E-05	8.12E-03	8.40E-03
	Selenium	7782-49-2	79.0	3.50E-07	1.02E-04	1.05E-04
	Silver	7440-22-4	107.9	4.80E-07	1.39E-04	1.44E-04
	Thallium	7440-28-0	204.4	4.10E-09	1.19E-06	1.23E-06
	Zinc	7440-66-6	65.4	6.10E-05	1.77E-02	1.83E-02



LEGEND

EMISSION POINTS

- (D) – DUCTED EMISSIONS
- (OD) – OPEN DUST EMISSIONS
- (ES) – EMISSION SOURCE
- (EP) – EMISSION POINT
- (CD) – CONTROL DEVICE
- FE – FUGITIVE EMISSIONS

NO	REVISION	APPR	BY	DATE

ASTEC INDUSTRIES, INC.
P.O. BOX 72787 • 4101 JEROME AVENUE • CHATTANOOGA, TN 37407

CUSTOMER	TYPICAL DOUBLE BARREL PLANT
PART NAME	PROCESS FLOW DIAGRAM
MACHINE	DOUBLE BARREL FACILITY
DWN CSChoate	CHKD / APPR / DATE
JOB NO	SHEET / SCALE NA / SIMILAR TO DWG
DWG NO	FD–xDB
REV	0